

CLAIMS

I claim:

1. A fixture mounting structure, comprising:
a base mountable securely to a support;
a cover attachable to the base;
a magnetic device to hold the cover and base together; and
a selectively operable mechanical retainer to provide retention of the cover to the base.
2. The fixture mounting structure of claim 1, wherein the magnetic device comprises a magnet and ferrous plate, said magnet being mounted to the base or the cover, and the ferrous plate being mounted to the opposing member.
3. The fixture mounting structure of claim 1, wherein the magnetic device is cooperatively related to the base and cover to hold together the base and cover in the event that the selectively operable mechanical retainer is intentionally or unintentionally released.
4. The fixture mounting structure of claim 1, wherein the selectively operable mechanical retainer is cooperatively related to the base and cover to hold together the base and cover in the event that the magnetic device intentionally or unintentionally releases.
5. The fixture mounting structure of claim 4, wherein the selectively operable mechanical retainer comprises a clip and a retention member, said clip being mounted to the cover and said retention member being mounted to the base.
6. The fixture mounting structure of claim 5, wherein the clip is housed within a clip holder, said clip being retractable within the clip holder by the application of a retracting tool.
7. The fixture mounting structure of claim 6, wherein the retention member is a retaining ring.
8. The fixture mounting structure of claim 7, wherein the retaining ring is grooved along its outer edge.

9. The fixture mounting structure of claim 8, further comprising a battery operated light fixture.

10. The fixture mounting structure of claim 8, further comprising a smoke detector.

11. The fixture mounting structure of claim 1, wherein the selectively operable mechanical retainer comprises a clip and a retention member, said clip being mounted to the cover and said retention member being mounted to the base.

12. The fixture mounting structure of claim 11, wherein the clip is housed within a clip holder, said clip being retractable within the clip holder by the application of a retracting tool.

13. The fixture mounting structure of claim 1, wherein the base further includes an electrical connection with respect to the cover.

14. The fixture mounting structure of claim 13, wherein the electrical connection provides for a signal coupling between the cover and the base.

15. The fixture mounting structure of claim 13, wherein the cover further comprises a means to couple electrical power from the base to the cover.

16. The fixture mounting structure of claim 15, wherein the means for coupling the electrical power from the base to the cover comprises a fixed terminal and a conductive ring.

17. The fixture mounting structure of claim 16, further comprising a light fixture.

18. The fixture mounting structure of claim 16, further comprising a smoke detector.

19. The fixture mounting structure of claim 1, further comprising a tool positionable with respect to the mechanical retainer to operate the same to uncouple the base from the cover.

20. The fixture mounting structure of claim 19, further comprising an elongated member to apply force to uncouple the magnetic device.

21. The fixture mounting structure of claim 20, wherein the elongated member is a pole.

22. A fixture installation and removal tool comprising:

a base;

a rod attachment means integrally formed within the base; and

a coupling means extending from the base at an angle to the rod attachment means.

23. The fixture installation and removal tool of claim 22, wherein the base is a tee base.

24. The fixture installation and removal tool of claim 22, wherein the rod attachment means is a threaded receptacle.

25. The fixture installation and removal tool of claim 24, wherein the rod attachment means further includes a locking screw.

26. The fixture mounting structure of claim 1, wherein the base further comprises a receiving slot, and a reinforcing plate which includes a means to accept a latching device.

27. The fixture mounting structure of claim 26, wherein the selectively operable mechanical retainer is a latch.

28. A fixture mounting structure, comprising:

a base mountable securely to a support;

a cover attachable to the base; and

a selectively operable mechanical retainer to provide retention of the cover to the base, wherein the selectively operable mechanical retainer is a touch latch.

29. A fixture mounting structure, comprising:

a base mountable securely to a support;

a cover attachable to the base; and

a selectively operable mechanical retainer to provide retention of the cover to the base, wherein the selectively operable mechanical retainer is a slam latch.

30. A fixture mounting system, comprising:

a first relatively fixed part having a retention mechanism;

a second part relatively movable with respect to the first part and attachable with respect thereto;

a tool for temporarily coupling with respect to the second part to position the second part with respect to and for retention to the first part; and

a latch to retain the tool and second part together, the latch being releasable upon positioning of the second part with respect to the first part.

31. A latch for a mounting system and related tool wherein one member may be mounted with respect to a mount by manipulating the one member using the tool, the latch comprising:

a selectively operable retainer to retain a coupled relation of the one member and tool; and

a release responsive to mounting of one member to facilitate separating the one member from the tool.

32. A latch mechanism for a mounting system in which one member is to be mounted with respect to a mount, comprising:

a tool for manipulating the one member with respect to the mount;

a selectively operable retainer to retain a coupled relationship between the tool and the one member; and

a release mechanism to release the retainer to facilitate separating the tool and the one member in response to mounting the one member with respect to mount.

33. A mounting system, comprising:

first and second parts;

said first part adapted for support from another object;

said second part adapted to support a device; and

a holding mechanism to hold said first and second parts together, said holding mechanism including a first magnetic retainer and a mechanically actuatable retainer.

34. A retention system for plural members, comprising:

a magnetic retainer for holding one such member relative to another such member; and

a selectively operable mechanical retainer for holding such one member and such another member together.

35. A mounting system for mounting an object from another member, comprising:

a first member attachable to a support;

a second member selectively attachable to and removable from the first member;

a first magnetic attachment having a first portion associated with said first member and a second portion associated with said second member, said portions being cooperative with each other to retain said first and second members together; and

a first selectively operable attachment having a first portion associated with said first member and a second portion associated with said second member.

36. A coupling method for plural members, wherein one member has associated with it at least one part of a magnetic retainer and another member has associated with it at least a second part of such magnetic retainer, comprising:

placing such one and another members in proximity for the magnetic retainer to hold them together; and

using a mechanical retainer to retain together such one and another members.

37. A mounting system for mounting an electrical device in a given location, wherein the electrical device has electrical connection requirements, comprising:

a base mountable relatively permanently to another device located at such given location, said base having first and second electrical terminals connectable to an electrical power source;

a cover attachable to and removable from said base while being manipulated from a location that is relatively remote from the given location, said base and having third and fourth electrical terminals, said first and third electrical terminals generally circumscribing an area surrounding a respective second and fourth electrical terminal;

at least one of said first and third electrical terminals being operable to deform resiliently in response to urging by the other of said first and third electrical terminals as said base and cover are urged together.

38. In an assembly for releasably coupling a suspended first subassembly to a secured second subassembly secured to a room's ceiling which is out of the reach of a person's outstretched arms when the person is standing on the room's floor, the improvement comprising,

the suspended subassembly and the secured subassembly being registrable and removably couplable, one with the other, by the person without manually directly contacting either;

the secured second subassembly comprising,

a base fixedly secured to the ceiling or other overhead location, the base having walls directed generally downward, and,

a first portion of a coupling means included within the walls of the base;

the suspended second subassembly comprising,

a mounting member having a generally planar floor;

a second portion of the coupling means included within the mounting member; and,

rod-accepting means integrally formed with the mounting member, the rod-accepting means being adapted to coact with one end of an elongated rod means.

39. The assembly of claim 38 wherein the rod-acceptance means is a rod-attachment means selected from a socket and a finger-like protrusion.

40. The assembly of claim 39 wherein the first portion of the coupling means comprises a magnet means and the second portion comprises a ferrous plate registrable with the magnet means when the suspended subassembly is coupled with the secured subassembly.

41. The assembly of claim 39 wherein the first portion of the coupling means comprises a magnet means and the second portion comprises a second magnet means registrable with the first magnet means when the suspended subassembly is coupled with the secured subassembly

42. The assembly of claim 39 wherein the coupling means comprises a detent means, one member of which is integral with the suspended subassembly and the other member of which is integral with the secured subassembly.

43. The assembly of claim 39 wherein the coupling means comprises a latching means one member of which is included in the suspended subassembly and the other member of which is included with the secured subassembly.

44. The assembly of claim 39 wherein the coupling means comprises inclined walls on the base and correspondingly inclined walls on the mount so that the walls are tightly interfitted with a press fit of their respective inclined surfaces overlying one with the other when the suspended subassembly is coupled with the secured subassembly.

45. The assembly of claim 39 wherein the coupling means comprises a hook and eyelet means, one member of which is adhesively secured within the suspended subassembly and the other member of which is adhesively secured within the secured subassembly.

46. The assembly of claim 40 wherein the magnet means includes at least one magnet secured in a dish-shaped base having a generally planar floor secured to the ceiling, and the ferrous plate is a steel ring overlying the magnets when the suspended subassembly is coupled to the secured subassembly.

47. The assembly of claim 46 wherein the magnet means includes plural magnets secured in spaced-apart relationship in the dish-shaped base.

48. The assembly of claim 42 wherein one member of the detent means is a groove in the apex formed by an outwardly upwardly flaring peripheral wall of the suspended subassembly and its floor, and the other member is a rim of a downwardly flaring peripheral wall of the secured subassembly.

49. The assembly of claim 43 wherein one member of the latching means comprises one or more laterally spaced apart catches, the other member comprising a latching arm translatable to and fro relative to the catches so as to engage and disengage them, the latching arm including upstanding latches the bases of which are fixed to the latching arm so as to rest upon the catches' lateral surfaces when coupled.

50. The assembly of claim 49 wherein each catch terminates in a V-shape portion having a generally triangular cross section with inclined and substantially lateral surfaces, and each latch terminates in a V-shape portion having a generally

triangular cross section with downwardly extending stubs having inclined and substantially lateral surfaces.

51. The assembly of claim 49 wherein the planar floor of the suspended subassembly is provided with fastening means adapted to pendently secure an article from the ceiling.

52. The assembly of claim 38 wherein the planar floor of the suspended subassembly includes a cup-shaped member and a suspension member attached to the lower surface of cup-shaped member, the suspension member having a much larger lower surface than that presented by the cup-shaped member and fastening means adapted to pendently secure an article from the ceiling.

53. The assembly of claim 52 wherein the suspension member includes a through-passage near its periphery, the passage being adapted to have an end of the rod inserted therein.

54. The assembly of claim 46 wherein a smoke detector and alarm assembly is pendently mounted from the planar floor of the suspended subassembly.

55. The assembly of claim 46 wherein the secured subassembly comprises a base having a floor with a downwardly extending peripheral wall, and plural magnets secured to the floor's lower surface with fastening means; and the suspended subassembly comprises a planar member having a planar floor having at least one steel plate secured therein, located directly opposite from and in registry with the magnets 94 the suspended subassembly is coupled to secured subassembly.

56. In an assembly for releasably coupling a smoke detector and alarm assembly to a secured subassembly secured to a room's ceiling which is out of the reach of a person's outstretched arms when the person is standing on the room's floor, wherein the smoke detector and alarm assembly includes a component-mounting floor and a cover, and a replaceable battery mounted on the component-mounting floor, the improvement comprising,

the smoke detector and alarm assembly and the secured subassembly being registrable and removably couplable by an angularly applied force, one with the other, by the person without manually directly contacting either;

the secured subassembly comprising,

a base fixedly secured to the ceiling, the base having walls directed generally downward, and

a first portion of a coupling means included within the walls of the base; the smoke detector and alarm assembly comprising,

a generally planar component-mounting floor;

a second portion of the coupling means included with the component-mounting floor, the second portion being positioned on the of the component-mounting floor's upper surface, the components being positioned on the floor's lower surface; and

rod-accepting means integrally formed with the cover, the rod-accepting means being adapted to coact with one end of an elongated rod means to overcome the coupling force.

57. The assembly of claim 56 wherein the rod-accepting means is a rod-attachment means.

58. The assembly of claim 57 wherein the rod-attachment means is selected from a socket and a finger-like protrusion.

58. In an assembly for releasably coupling a suspended lighting fixture subassembly to a secured base member secured to a room's ceiling which is out of the reach of a person's outstretched arms when the person is standing on the room's floor, the improvement comprising,

the suspended lighting fixture subassembly and secured the base member being registrable and removably couplable, one with the other, by the person without manually directly contacting either;

the secured base member comprising,

a base fixedly secured to the ceiling, the base having an inwardly directed peripheral wall projecting downward, the outer surfaces of the wall being inclined towards the base member's vertical centerline, and,

a boss projecting downward from the lower surface of the base, the boss having a central recess and a circumferential shoulder, the central recess having a first terminal in electrical connection with a first electrical line in the ceiling, and the circumferential shoulder having a second terminal in electrical connection with a second electrical line in the ceiling;

the suspended lighting fixture subassembly comprising,

a mounting member having a generally planar floor and an outwardly directed peripheral wall projecting upward, the inner surfaces of the wall being inclined away from the mounting member's vertical centerline, and adapted to be matingly interfitted with the inwardly directed wall of the base; and,

a boss projecting upward from the upper surface of the floor the boss having a central recess and a circumferential shoulder, the central recess having a third terminal in electrical connection with the first terminal in the base, and the circumferential shoulder having a fourth terminal in electrical connection with the second terminal in the base; and,

rod-attachment means integrally formed with the mounting member, the rod-attachment means being adapted to coact with one end of an elongated rod means;

whereby the upwardly inclined surface of the wall on the base and the correspondingly inclined surface of the wall of the mounting member are tightly interfitted with a press fit of their respective inclined surfaces overlying one with the other when the lighting fixture subassembly is coupled with the base member.

60. A method of releasably coupling a secured subassembly to a suspended subassembly to be mounted on a ceiling of a room, comprising,

securing the secured subassembly to the ceiling, the secured subassembly including a first portion of a coupling means;

supporting the suspended subassembly on the end of an elongated rod, the suspended subassembly including a second portion of the coupling means and a rod-acceptance means;

registering the suspended subassembly to the secured subassembly to engage the coupling means; and,

removing the rod.

61. The method of claim 59 including, thereafter decoupling the suspended subassembly from the secured subassembly, comprising, attaching one end of a rod to the rod-attachment means secured to the suspended subassembly; exerting a force on the rod sufficient to decouple the suspended subassembly from the secured subassembly; supporting the decoupled suspended subassembly on the end of the rod; and lowering the suspended subassembly.

62. The method of claim 59 comprising, magnetically coupling the subassemblies, including interposing a magnet and a ferrous plate between the secured and suspended subassemblies.

63. The method of claim 59 comprising, interfitting the subassemblies with an interference fit between correspondingly inclined surfaces of walls thereof, and, providing terminals in the suspended subassembly which are in electrical connection with terminals in the secured subassembly, and in turn, in electrical connection with current-carrying leads in the ceiling.

64. The method of claim 60 where in the rod-attachment means is chosen from a socket having a smooth bore and a threaded bore.

65. The method of claim 63 wherein the socket has a smooth bore and the force is exerted at an angle relative to the vertical centerline of the secured base.

66. The method of claim 61 wherein the socket has a threaded bore, the rod has an end threadedly secured in the socket, and the force is exerted coaxially with the vertical centerline of the secured base.